

Patent claims

1. A device for monitoring a gas volume in a unit (12) filled with a liquid, the unit (12) having an inflow line (13) with at least one expansion vessel (1a) and the device having at least one buoyant body (5) floating in the liquid, characterized in that the floating buoyant body (5) is connected to a shaft (11) that is fixed in place in the expansion vessel (1a) and is mounted rotatably with respect to the shaft (11).
2. The device as claimed in claim 1, characterized in that a connecting element (4a) connects the shaft (11) to the buoyant body (5) kept at a distance from the latter.
3. The device as claimed in either of claims 1 and 2, characterized in that a fixed-in-place force transducer (7) detects the torque on the connection (4a) at a predetermined length (a).
4. The device as claimed in one of claims 1 to 3, characterized in that, if a predetermined torque is exceeded by a torque measured in the force transducer (7), a processing device generates a warning message.
5. The device as claimed in one of claims 1 to 4, characterized in that a number of buoyant bodies (5) are arranged at fixed vertical levels (9), respectively offset from one another with respect to the shafts (11) arranged parallel to one another, the respective buoyant bodies (5) being of different sizes and/or densities.

- 1 6. The device as claimed in either of claims 1 and 2,  
2 characterized in that a fixed-in-place angulometer detects  
3 the angle between the connecting element (4a) and a  
4 horizontal transverse axis of the shaft (11).  
5
- 6 7. The device as claimed in claim 6, characterized in that, if  
7 a predetermined angle of the connecting element (4a) is  
8 exceeded, a processing device generates a warning message.  
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- 10 8. The device as claimed in one of claims 1 to 7,  
11 characterized in that the buoyant body (5) has additional  
12 capacitive and/or inductive and/or optical elements, a  
13 processing device detecting the electromagnetic and/or  
14 electrical and/or optical signals generated by them.  
15
- 16 9. A method for monitoring a gas volume in a unit (12) filled  
17 with a liquid, the unit (12) having an inflow line (13)  
18 with at least one expansion vessel (1a) and a buoyant body  
19 (5) that floats in the liquid being located in the  
20 expansion vessel (1) and the buoyant body (5) being  
21 connected in the expansion vessel (1a) to a fixed-in-place  
22 shaft (11) and mounted rotatably, the rotating movement of  
23 the floating body (5) with respect to the shaft (11) being  
24 detected.  
25
- 26 10. The method as claimed in claim 9, characterized in that the  
27 shaft (11) is fixed at a fixed vertical level (9) within  
28 the expansion vessel (1a) on the basis of a maximum gas  
29 volume to be detected in relation to the inner side of the  
30 upper covering (10a) of the expansion vessel (1a)  
31

- 1 and the shaft (11) is fixed at fixed vertical levels (9) by
- 2 means of a fixing device.